What is claimed is:

1. Device for depositing in particular crystalline layers on in particular crystalline substrates from the gas phase, which includes

   a heated reaction chamber (1) having a substrate holder (2) for receiving at least one substrate (3);

   one or more heated sources (4), where a gaseous halide is formed by chemical reaction of a halogen, in particular HC1, which is fed to the source together with a carrier gas, and a metal, for example Ga, In, Al, arranged at the source (4), the gaseous halide being conveyed through a gas inlet section (5) to a substrate supported by the substrate holder (2);

   a hydride feedline (6) for feeding a hydride, in particular NH_3, Ash_3 or PH_3, into the reaction chamber,

   characterized in that the reaction chamber, (1) has an axis of symmetry, and a multiplicity of rotationally driven substrate holders (2) are arranged annularly about the axis of symmetry on the substrate holder (7), the separately heatable sources being disposed in the axis of symmetry.

2. Method for depositing in particular crystalline layers on in particular crystalline substrates from the gas phase, which includes

   a heated reaction chamber (1) having a substrate holder (2) for receiving at least one substrate (3);

   one or more heated sources (4), where a gaseous halide is formed by chemical reaction of a halogen, in particular HC1, which is fed to the source together with a carrier gas, and a metal, for example Ga, In, Al, arranged at the source (4), the gaseous halide being conveyed through a gas inlet section (5) to a substrate supported by the substrate holder (2);

a hydride feedline (6) for feeding a hydride, in particular NH_3, Ash_3 or PH_3, into the reaction chamber,

characterized in that the reaction chamber (1) has an axis of symmetry about which the substrate holder carrier (7) is rotationally driven, on which substrate holder carrier a multiplicity of substrate holders in annular arrangement about the axis of symmetry are rotationally driven, and the halide is generated in separately heated sources which are disposed in the axis of symmetry.

3. Device according to Claim 1 or method according to Claim 2, characterized in that the hydrides or the halides flow through the reaction chamber (1) in the radial direction.

4. Device or method according to one of the preceding claims, characterized in that the halide or the halogen is introduced into the center of the reactor.

5. Device or method according to one of the preceding claims, characterized in that the source (4) is heated (8) by light or high frequency.

6. Device or method according to one of the preceding claims, characterized in that the substrate holder carrier (7) is rotationally driven.

7. Device or method according to one of the preceding claims, characterized in that the source (4) rotates with the substrate holder carrier or is fixed in position.

8. Device or method according to one of the preceding claims, characterized in that the hydride emerges from openings (10) in the reaction chamber cover (12) positioned opposite the substrate holder carrier (7).

9. Device or method according to Claim 8, characterized in that the openings (10) are distributed uniformly over the annular substrate holder carrier (7).

10. Device or method according to one of the preceding claims 8 or 9, characterized in that the openings (10) are arranged in radial zones which are positioned angularly offset with respect to one another.

11. Device or method according to one of the preceding claims, characterized by sections with openings (26) for the halides to enter, disposed between the radial zones.

12. Device or method according to one of the preceding claims, characterized in that a plurality of sections for the introduction of different halides are disposed offset with respect to one another in the circumferential direction and are separated from one another in particular by the openings (10) for introducing the hydride.

13. Device or method according to one of the preceding claims, characterized in that the sources (4) are formed by halogen-swept pans (17) or by halogen-washed-through containers (18).

14. Device or method according to one of the preceding claims, characterized in that the substrate holders (2) mounted on gas cushions (14) are rotationally driven by means of a gas stream.

15. Device or method according to one of the preceding claims, characterized in that Si or Al_20_3 substrates, with a diameter of up to 300 mm, are used as substrate material.

16. Device or method according to one of the preceding claims, characterized in that a CaN layer and/or layer sequence comprising A1GalnN are applied to the substrates.

17. Device or method according to one of the preceding claims, characterized in that the layers or layer sequences, which are approx. 200 µm thick, are removed from the substrate and used as substrate for the deposition of CaN.

18. Device or method according to one of the preceding claims, characterized in that a gaseous dopant is also introduced into the reaction chamber (1) in parallel with the hydride from Group V.

19. Device or method according to one of the preceding claims, characterized by one or more sources for receiving a solid or liquid dopant which is conveyed into the reaction chamber as a halide.